UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/908,867	08/08/1997	ANDREW A. YOUNG	227/166	9959

7590 12/22/2003

ARNOLD & PORTER
Attn IP Docketing Department Room 1126B
555 Twelfth Street NW
Washington, DC 20004-1206

EXAMINER	
CANELLA, KAREN A	
ART UNIT	**PAPER NUMBER**
1642	

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	08/908,867	YOUNG ET AL.	
	Examiner	Art Unit	
	Karen A Canella	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) 31-51 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) 41 and 42 is/are objected to.

8)☐ Claim(s) 31-40 and 43-51 are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 35, 39 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: attachment

DETAILED ACTION

1. Please note that the examiner assigned to this application has changed.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

3. Claims 31-51 are pending and under consideration.

4. Claims 33 and 34 are objected to under 37 CFR 1.75 as being substantial duplicates of claims 31 and 32, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

5. Claims 41 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 40 and 44-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(A)It is unclear how claim 40 further limit the scope of claims 31-34. It is unclear how the recitation of "said gastric motility" further limits claims 31 and 32 because the recitation of gastric motility in claims 31-34 is specifically in the context of reducing gastric motility rather than a particular level of gastric motility that can be associated with a pathogenic state. Amendment of claim 40 to recite "...wherein said subject is suffering from a gastrointestinal disorder" would over come this rejection.

(B)Claims 44-46 are unclear in the recitation of "activity of the exendin of which it is an analog or derivative". It is unclear if the "activity" referred to is the reduction of gastric motility and the delaying of gastric emptying, or if the "activity" refers to another activity attributable to

the exendins, such as the ability to stimulate rat pancreatic adenylate cyclase activity (Vandermeeers et al, European Journal of Biochemistry, 1987, Vol. 164, pp. 321-327, especially page 324, first column, lines 4-6) or the binding to the VIP receptors resulting in the increasing cellular cAMP and amylase release, or binding to the pancreatic acinar receptor, specifically designated as the exendin receptor (Rai et al, American Journal of Physiology, 1993, Vol. 265, pp. G118-G125, (cited in a previous Office action), especially page G118, first column, lines 18 under the abstract to second column, line 15). The specification states on page 17, lines 2-6 that "Exendin analogs or derivatives are functional variants having similar amino acid sequence and retaining to some extent at least the gastric motility and gastric emptying related activities of the related exendin.". This statement does not serve to limit the "activity" in claims 44-47 solely to the activities of delaying gastric emptying or inhibiting gastric motility of the activity of claims 44-46. Without a limitation as to the specific "activity" the metes and bound cannot be determined.

7. Claims 31-40 and 43-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to methods of using exendin agonists, analogs and derivatives. the specification lacks adequate written description for the agonists, analogs and derivatives on which the instant method claims rely.

(A) As drawn to exendin

The claims rely on a genus of exendins. The art recognizes helospectins and helodermin as exendin 1 and 2 respectively. Said helospectins, helodermins and exendins 3 and 4 are isolated from the venom of Heloderma. The art teaches that multiple variants of helodermin and helospectin coexist in each venom sample. The specification fails to teach how the structure of one exendin anticipates the structure of other exendins, helospectins or helodermins. Structural and functional attributes which could be used to recognize molecules which do not belong within the genus are missing from the specification and the claims. The genus is highly variant because

the specification fails to set forth structural attributes to limit said genus. Thus, the disclosure of exendins 3 and 4 as member of the genus do not serve to describe the genus because said genus encompasses member species having widely differing structural attributes. The specification provides no teachings as to how the structures of helodermin, helospectin, exendin 3 and 4 relate to other species within the genus. One of skill in the art would conclude that applicant was not in possession of the claimed genus of exendin peptides.

(B) As drawn to exendin agonists

The instant claims encompass agonists to exendin family members beyond those of exending-3 and exendin-4. The art recognizes that helodermin and helospectin bind to the VIP and secretin receptors, whereas exendins 3 and 4 bind to the VIP and secretin receptors in addition to the specific exendin receptors (Rai et al, American Journal of Physiology, 1993, Vol. 265, pp.G118-G125, cited in a previous Office action). The genus of "exendin agonists" encompasses molecules which can antagonize any of the peptides or proteins included in the "exendin" family at any receptor to which said exendins bind. The disclosure of SEQ ID NO:38 and 39 do not serve to describe the claimed genus of agonists because said genus encompasses agonists which bind to receptors other than the receptor bound by SEQ ID NO:39 because the exendins encompassed by the claim include all peptides isolated from Heloderma venom. One of skill in the art would conclude that applicant was not in possession of the claimed genus of exendin agonists. Claims 41 and 42 are not included with this rejection because the receptor binding would be inherent in the specific amino acid sequences encompassed by SEQ ID NO:38 and SEQ ID NO:39.

8. Claims 31-34, 37, 38, 40, 43-46 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Strandberg et al (Acta Radiologica, 1988, Vol. 29, pp. 49-52).

Claim 31 is drawn in part to a method of reducing gastric motility in a subject comprising administering to said subject a therapeutically effective amount of an exendin agonist. Claim 32 is drawn in part to a method of delaying gastric emptying in a subject comprising administering to said subject a therapeutically effective amount of an exendin agonist. Claim 33 is drawn in part to a method of reducing gastric motility in a subject comprising administering to said subject an amount of an exendin agonist effective for reducing gastric motility. Claim 34 is drawn in

part to a method of delaying gastric emptying in a subject comprising administering to said subject and amount to an exendin agonists effective for delaying gastric emptying. Claim 37 embodies the methods of claims 31-34 wherein said subject is undergoing gastrointestinal diagnostic procedure. Claim 38 embodies the method of claim 37 wherein said gastrointestinal diagnostic procedure is a radiological examination. Claim 40 embodies the methods of claims 31 or 33 wherein said gastric motility is associated with a gastrointestinal disorder. Claim 43 embodied the methods of claims 31, 32, 33 or 34, wherein said agonist is an exendin analog or derivative. Claims 44-46 embody the method of claim 43 wherein said exendin analog or derivative has an activity about 1% to 10,0000%, 10% to 1,000%, 50% to 500% of the exendin of which it is an analog or derivative. Claim 51 embodies the method of claim 43 wherein said exendin analog or derivative is an analog or derivative of exendin-4.

Strandberg et al disclose a method of reducing gastric motility in a subject under going a gastrointestinal examination comprising the administration of 1 mg of glucagon (page 50, first column, lines 3-11 and Table 2). Strandberg et al disclose that the subjects were patients submitted for radiological examination of the stomach and duodenum, thus it is reasonable to conclude that the subjects were suffering from a gastrointestinal disorder, thus fulfilling the specific embodiment of claim 40. Strandberg et al do not address the specific embodiment of delaying gastric emptying, however, it would be inherent in the disclosed method that the dosage of glucagon adequate for reducing gastric motility would also delay gastric emptying. It is noted that Table 1 of Strandberg indicates that hypomotility (grade 4) of the stomach and duodenum was evident five to ten minutes after the glucagon dose for the majority of patients. It is reasonable to conclude that hypomotility of both the stomach an the duodenum is consistent with a delay in gastric emptying, because gastric emptying necessarily depends on gastric motility. It is noted that glucagon is amino acid residues 53-81 of glucagon precursor (Accession Number CAA24759) and that alignment of glucagon versus exendin-3 and exendin-4 indicates that said glucagon has 14 out of 39 residues in common with exendin-3 and 13 out of 39 residues in common with exendin-4 (see attached alignments). The specification defines a "derivative" as having at least 15% sequence identity with the related exendin (page 17, lines 19-22). The specification states that the sequence similarity refers to sequence homology between two peptides , irrespective of the origin of the polypeptide (page 17, lines 22-25). The specification

states that derivatives are functional variants and said functional variants must retain one or more activities of a particular exendin. Based on the definitions within the specification, glucagon fulfills the specific embodiment of an exendin derivative and an exendin-4 derivative and an exendin analog and an exendin-4 analog as well, because glucogen has 33.3% sequence similarity to exendin-4 and 35.8% sequence similarity to exendin-3 based on the number of positive matches across the sequence, and because the specification places no constraints upon the level of sequence homology of an analog.. It is acknowledged that the specification discusses analogs as functional variants, and states that functional variants have "similar" amino acid sequences to exendins (page 17, lines 1-7); however, sequence "similarity" is a relative term and without a specific limiting definition does not serve to limit the metes and bounds of an analog.

Strandberg et al do not disclose an activity of glucagon relative to said activity of exendin-3 or 4. However, the claimed methods appear to be the same as the prior art methods, absent a showing of unobvious differences. The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that glucagon does not possess 1% to 10,0000%, 10% to 1,000%, or 50% to 500% of an activity of the exendin which it is an analogue or derivative of. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed methods are different from those taught by the prior art. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

9. Claims 31-34, 37-40, 43-46 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Kolterman et al (WO 95/07098, reference of the IDS submitted August 3, 1999). The specific embodiments of claims 31-34, 37, 38, 40, 43-46 and 51 are recited above. Claim 39 embodies the method of claim 38 wherein said gastrointestinal procedure is magnetic resonance imaging.

Kolterman et al disclose a method for reducing gastric motility and slowing gastric emptying comprising administering amylin or an amylin antagonists (page 21, lines 13-16). . Kolterman et al disclose that the method is used on a subject undergoing a gastrointestinal diagnostic procedure, such as magnetic resonance imaging and wherein said subject is suffering

from a gastrointestinal disease, therefore fulfilling the specific embodiment of claims 39 and 40 (page 23, lines 3-9).

Amylin and amylin agonists fulfills the specific embodiment of an exendin analog or an exendin-4 analog because the specification places no constraints upon the level of sequence homology of an analog.. It is acknowledged that the specification discusses analogs as functional variants, and states that functional variants have "similar" amino acid sequences to exendins (page 17, lines 1-7); however, sequence "similarity" is a relative term and without a specific limiting definition does not serve to limit the metes and bounds of an analog.

Kolterman et al do not disclose an activity of amylin or amylin agonists relative to said activity of an exendin. However, the claimed methods appear to be the same as the prior art methods, absent a showing of unobvious differences. The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that glucagon does not possess 1% to 10,0000%, 10% to 1,000%, or 50% to 500% of an activity of the exendin which it is an analogue or derivative of. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed methods are different from those taught by the prior art. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

10. Claims 31-36, 40 and 43-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Eng (U.S. 5,424,286, reference of the IDS filed August 3, 1999) as evidenced by Phillips et al (US 5,187,154). The specific embodiments of claims 31-34, 40 and 43-46 are recited above.

Claims 35 and 36 embody the methods of claims 31, 32, 33 or 34, wherein said exendin is exendin-3 or exendin-4, respectively. Claim 47, 48, 49 and 50 embody the method of claim 43 wherein said exendin analog or derivative has about 50%, 70%, 90% and 95% amino acid sequence similarity to the exendin to which it is an analogue or derivative.

Eng teach a method for treating diabetes mellitus in an individual wherein said method comprises the administration of an insulino-tropic composition sufficient to treat said diabetes, wherein said insulinotrophic molecule is selected from the group consisting of exendin-3 or exendin-4 or fragments thereof, and derivatives of said exendins and fragments (column 2, line 65 to column 3, line 22). The disclosure of Eng does not address the inhibition of gastric

motility or the delaying of gastric emptying within said patients. However, the administration of exendin-3 and exendin-4 would inherently cause said inhibition of gastric motility and delaying of gastric emptying. The disclosure of Eng does not specifically address the method wherein said subject has a gastrointestinal disorder. Phillips et al disclose that certain diabetic patients, such as those in the early stages of diabetes or those having non-insulin dependent diabetes exhibit rapid gastric emptying. It would be expected that the individuals treated by Eng et al would encompass individuals having non-insulin dependent diabetes and the early stages of diabetes (column 2, lines 34-40), and therefore said patients would comprise gastric motility associated with a gastrointestinal disorder, thus fulfilling the specific embodiments of claim 40. Eng discloses that exendin-4 is an analog of exendin-3 having an identical amino acid sequence with the exception of two substitutions at residues 2 and 3 (column 2, lines 21-24). Based on a sequence length of 39 amino acids for exendin-3 and exendin-4 it is determined that exendin-4 is 94.87% identical to exednin-3 of which it is an analog and therefore the specific embodiment of claim 50 drawn to analogue or derivative having at least about 95% sequence similarity, and the specific embodiments of claims 47-49 are fulfilled.

11. Claims 31-34, 43–47 and 51 are rejected under 35 U.S.C. 102(a) as being anticipated by Johnson et al (WO 96/06628) as evidenced by Holst (Gastroenterology, 1994, Vol. 107, pp. 1848-1855, reference of the IDS filed April 15, 2002) and Phillips et al (US 5,187,154) and Raufman et al (Journal of Biological Chemistry, 1992, Vol. 267, pp. 21432-21437, reference of the IDS filed August 3, 1999). The specific embodiments are recited above.

Johnson et al disclose a method for treating diabetes or hyperglycemia comprising the administration of GLP-1 (page 15, lines 5-10). The disclosure of Johnson et al does not address the inhibition of gastric motility or the delaying of gastric emptying within said patients. However, it would be inherent in the method that the administration of GLP-1 would inhibit gastric motility and delay gastric emptying as evidenced by Holst et al who discloses that the GLP-1 peptide is a potent inhibitor of gastric motility (abstract, lines 18-21) and gastric emptying (page 1852, first column, lines 14-16). The disclosure of Johnson et al does not specifically address the method wherein said subject has a gastrointestinal disorder. Phillips et al disclose that certain diabetic patients, such as those in the early stages of diabetes or those having

non-insulin dependent diabetes exhibit rapid gastric emptying. It would be expected that the individuals treated by the method of Johnson et al would encompass individuals having non-insulin dependent diabetes and the early stages of diabetes (column 2, lines 34-40), and therefore said patients would comprise gastric motility associated with a gastrointestinal disorder, thus fulfilling the specific embodiments of claim 40. Raufman et al disclose that GLP-1 is a mammalian analogue of exendin-4, sharing 53% homology with exendin-4, thus fulfilling the specific embodiments of claims 47 and 51.

Johnson et al do not disclose an activity of GLP-1 to said activity of exendin-4. However, the claimed methods appear to be the same as the prior art methods, absent a showing of unobvious differences. The Office does not have the facilities and resources to provide the factual evidence needed in order to establish that GLP-1 does not possess 1% to 10,0000%, 10% to 1,000%, or 50% to 500% of "an activity" of the exendin-4. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed methods are different from those taught by the prior art. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

12. All other rejections and objections as set forth in Paper No. 29 are withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Canella whose telephone number is (703) 308-8362. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Karen A. Canella, Ph.D.
Primary Examiner, Group 1642
12/11/03

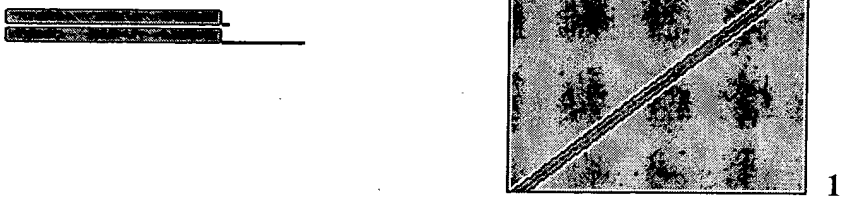
ATTACHMENT

Blast 2 Sequences results

BLAST 2 SEQUENCES RESULTS VERSION BLASTP 2.2.6 [Apr-09-2003]

Matrix BLOSUM62 gap open: 11 gap extension: 1
x_dropoff: 50 expect: 10.0 wordsize: 3 Filter Align

Sequence 1 lcl|seq_1 **Length** 29 (1 .. 29) glucacon
Sequence 2 lcl|seq_2 **Length** 39 (1 .. 39) exendin-3



NOTE:The statistics (bitscore and expect value) is calculated based on the size of nr database

```
Score = 36.2 bits (82), Expect = 0.16
Identities = 14/28 (50%), Positives = 19/28 (67%)
```

```
Query: 1  HSQGTFTSDYSKYLDSRRAQDFVQWLMN 28
          HS GTFTSD SK ++     + F++WL N
Sbjct: 1  HSDGTFTSDLSKQMEEEAVRLFIEWLKN 28

CPU time:      0.01 user secs.       0.00 sys. secs          0.01 total secs.

Lambda      K       H
   0.319     0.127     0.394

Gapped
Lambda      K       H
   0.267    0.0410     0.140


Matrix: BLOSUM62
Gap Penalties: Existence: 11, Extension: 1
Number of Hits to DB: 15
Number of Sequences: 0
Number of extensions: 1
Number of successful extensions: 1
Number of sequences better than 10.0: 1
Number of HSP's better than 10.0 without gapping: 1
Number of HSP's successfully gapped in prelim test: 0
Number of HSP's that attempted gapping in prelim test: 0
Number of HSP's gapped (non-prelim): 1
length of query: 29
length of database: 516,014,495
```

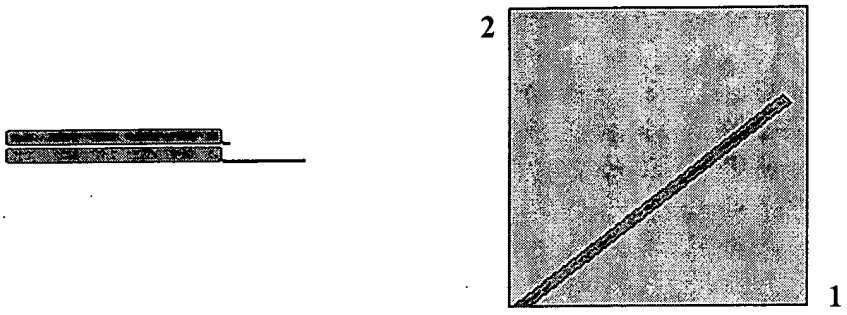
NCBI

Blast 2 Sequences results

BLAST 2 SEQUENCES RESULTS VERSION BLASTP 2.2.6 [Apr-09-2003]

Matrix BLOSUM62 gap open: 11 gap extension: 1
x_dropoff: 50 expect: 10.0 wordsize: 3 Filter ☐ Align

Sequence 1 lcl|seq_1 **Length** 29 (1 .. 29) glucagon
Sequence 2 lcl|seq_2 **Length** 39 (1 .. 39) exendin-4.



NOTE:The statistics (bitscore and expect value) is calculated based on the size of nr database

```
Score = 35.4 bits (80), Expect = 0.27
Identities = 13/28 (46%), Positives = 19/28 (67%)

Query: 1  HSQGTFTSDYSKYLDSRRAQDFVQWLMN 28
          H +GTFTSD SK ++     + F++WL N
Sbjct: 1  HGEGTFTSDLSKQMEEEAVRLFIEWLKN 28

CPU time:      0.02 user secs.       0.00 sys. secs          0.02 total secs.

Lambda     K      H
   0.319    0.127    0.394

Gapped
Lambda     K      H
   0.267   0.0410    0.140


Matrix: BLOSUM62
Gap Penalties: Existence: 11, Extension: 1
Number of Hits to DB: 14
Number of Sequences: 0
Number of extensions: 1
Number of successful extensions: 1
Number of sequences better than 10.0: 1
Number of HSP's better than 10.0 without gapping: 1
Number of HSP's successfully gapped in prelim test: 0
Number of HSP's that attempted gapping in prelim test: 0
Number of HSP's gapped (non-prelim): 1
length of query: 29
length of database: 517,180,703
```

ATTACHMENT

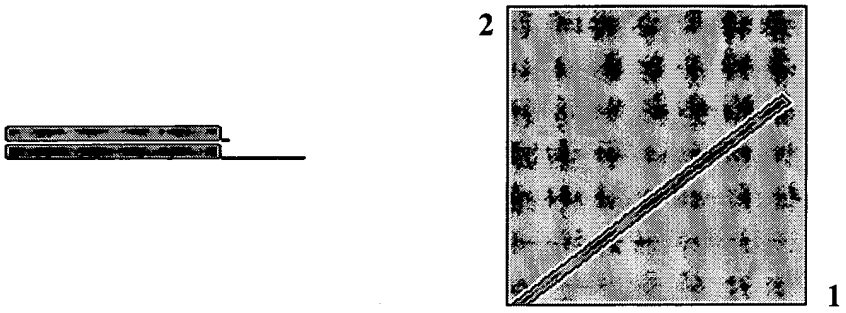
NCBI **Blast 2 Sequences results**

PubMed Entrez BLAST OMIM Taxonomy Structure

BLAST 2 SEQUENCES RESULTS VERSION BLASTP 2.2.6 [Apr-09-2003]

Matrix BLOSUM62 gap open: 11 gap extension: 1
x_dropoff: 50 expect: 10.0 wordsize: 3 Filter ☐ Align

Sequence 1 lcl|seq_1 **Length** 29 (1 .. 29) glucacon
Sequence 2 lcl|seq_2 **Length** 39 (1 .. 39) exendin-3



NOTE:The statistics (bitscore and expect value) is calculated based on the size of nr database

```
Score = 36.2 bits (82), Expect = 0.16
Identities = 14/28 (50%), Positives = 19/28 (67%)

Query: 1  HSQGTFTSDYSKYLDSRRAQDFVQWLMN 28
          HS GTFTSD SK ++    + F++WL N
Sbjct: 1  HSDGTFTSDLSKQMEEEAVRLFIEWLKN 28

CPU time:     0.01 user secs.       0.00 sys. secs          0.01 total secs.

Lambda     K      H
   0.319    0.127    0.394

Gapped
Lambda     K      H
   0.267   0.0410    0.140


Matrix: BLOSUM62
Gap Penalties: Existence: 11, Extension: 1
Number of Hits to DB: 15
Number of Sequences: 0
Number of extensions: 1
Number of successful extensions: 1
Number of sequences better than 10.0: 1
Number of HSP's better than 10.0 without gapping: 1
Number of HSP's successfully gapped in prelim test: 0
Number of HSP's that attempted gapping in prelim test: 0
Number of HSP's gapped (non-prelim): 1
length of query: 29
length of database: 516,014,495
```

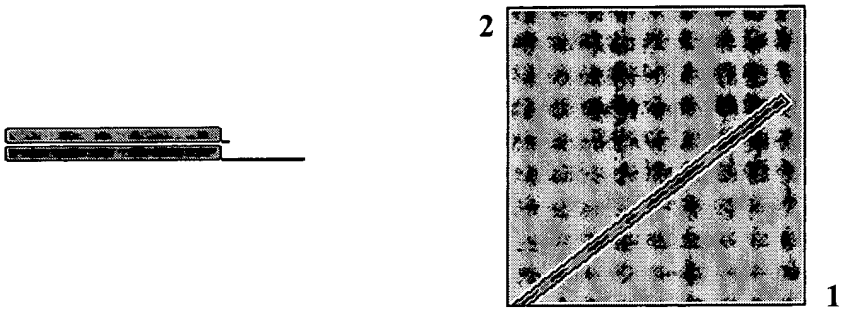
NCBI

Blast 2 Sequences results

BLAST 2 SEQUENCES RESULTS VERSION BLASTP 2.2.6 [Apr-09-2003]

Matrix BLOSUM62 gap open: 11 gap extension: 1
x_dropoff: 50 expect: 10.0 wordsize: 3 Filter ☐ Align

Sequence 1 lcl|seq_1 **Length** 29 (1 .. 29) glucagon
Sequence 2 lcl|seq_2 **Length** 39 (1 .. 39) exendin-4



NOTE:The statistics (bitscore and expect value) is calculated based on the size of nr database

```
Score = 35.4 bits (80), Expect = 0.27
Identities = 13/28 (46%), Positives = 19/28 (67%)
```

```
Query: 1  HSQGTFTSDYSKYLDSRRAQDFVQWLMN 28
          H +GTFTSD SK ++     + F++WL N
Sbjct: 1  HGEGTFTSDLSKQMEEEAVRLFIEWLKN 28
```

```
CPU time:      0.02 user secs.       0.00 sys. secs          0.02 total secs.

Lambda      K      H
   0.319 ·   0.127    0.394

Gapped
Lambda      K      H
   0.267    0.0410    0.140


Matrix: BLOSUM62
Gap Penalties: Existence: 11, Extension: 1
Number of Hits to DB: 14
Number of Sequences: 0
Number of extensions: 1
Number of successful extensions: 1
Number of sequences better than 10.0: 1
Number of HSP's better than 10.0 without gapping: 1
Number of HSP's successfully gapped in prelim test: 0
Number of HSP's that attempted gapping in prelim test: 0
Number of HSP's gapped (non-prelim): 1
length of query: 29
length of database: 517,180,703
```